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NATIONAL SCIENCE FOUNDATION
WASHINGTON D C 20550

CSNET–the Computer Science Research Network

CSNET, which is funded by The National Science Foundation, is a cooperative effort of computer scientists to establish a computer-based communications network which will interconnect computer science research groups in universities, industry and government. Based on recent advances in computer network technology, including international protocol standards and the availability of commercial packet networks, CSNET will provide a feasible means for collaborative work at the forefront of computer science research. The benefits to the community are expected to be very significant, when compared to initial investments and continuing costs.

CSNET will link hosts on a number of other computer communications networks including the Department of Defense ARPANET and public packet networks such as TELENET and TYMNET. CSNET will evolve by adoption of new technology as it becomes available and hence will offer continuing state- of-the-art computer communications services to the computer science research community. As new public networks are established, CSNET will expand to accommodate hosts that are connected to them. Gateways will connect the component networks so that communication between any two CSNET hosts will be possible. For CSNET hosts that are not directly connected to existing networks, a telephone-based memo relay system called "PhoneNet" will extend CSNET interconnection to all who desire it. If neither PhoneNet nor public network links can be justified for a host, access for individuals may be via a Public Host which will operate in the mode of a timesharing utility.

Communications services to be provided include memo and file transfer and interactive terminal access to remote systems and databases. The new Department of Defense (DoD) internet host-to-host protocols (TCP/IP) will be used. These protocols are being implemented by a number of industry and university groups for many computer systems of the type used by the computer science research community. Availability of these already developed and tested implementations will significantly reduce the cost of CSNET implementation.

In the future, most public network hosts will utilize the X.25 international standard protocol for network connection. A CSNET software effort will involve development of X.25 packages and interfaces for relevant operating systems and adaptation of X.25 interfaces to the DoD host-to-host protocols.

CSNET will be implemented in several phases. Phase One, to be completed at the end of the first year, includes establishing PhoneNet and a Public Host. The Public Host will provide access to CSNET via local public network dial-in ports, for researchers without a local CSNET host. Phase Two, to be completed by the end of the third year, will involve implementing and testing the X.25 network connection protocol plus required operating system and higher-level protocol interfaces. This will enable full host-to-host communications services via the public networks.

The management reponsibilities for the project will reside with NSF's Division of Mathematical and Computer Sciences until a Coordination and Information Center is established in the third year to provide for the continued development and growth of CSNET.

23 June 1981

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CSNET PROJECT REPORT-1

June 23,1981

The CSNET Management Committee has initiated this report series to provide liaisons and other interested parties with periodic CSNET status information.

Organizations wishing to receive these reports should send a request to:

CSNET Administrative Center
Computer Science Dept.
Univ. of Wisconsin
1210 W. Dayton St.
Madison, WI 53706

Status of CSNET Contracts

NSF has awarded contracts for CSNET development to the University of Wisconsin-Madison (Public Host/Service Host), the University of Delaware and The Rand Corporation (PhoneNet), and Purdue University (Protocol Development). Principal contacts at these sites are: Delaware - D. Farber, Rand - A. Hearn, Purdue - D. Comer and P. Denning, and Wisconsin - L. Landweber and M. Solomon.

CSNET Equipment Status

Equipment ordered includes four DEC VAX 11/750's, one for each of the PhoneNet relays (Delaware and Rand), and a dual-processor system for the Public Host/Service Host (Wisconsin). Delivery is scheduled for October. These systems will run the Berkeley VAX UNIX operating system. Associated Computer Consultants IF-11/X.25's will provide front-end X.25 support for CSNET VAX and PDP11 systems for connection to Telenet. The first IF-11/X.25 will be delivered to Purdue this summer.

ArpaNet Connections

Delaware, Purdue, and Wisconsin will be connected to ArpaNet by September, with initial service at 9.6K bps. Telenet connections at 9.6K bps for Purdue and Wisconsin will be installed this summer. Delaware and Rand connections at 1.2K bps have been ordered for January 1982.

Application for CSNET access

The Management Committee is distributing applications for PhoneNet and Public Host test-site status. Information on criteria for selection accompanies the application form. Applications should be returned as soon as possible to the CSNET Administrative Center.

CSNET CIC Status

The Organization Support Group met in May to provide NSF with advice on the Coordination and Information Center (CIC). NSF will soon distribute a program announcement requesting proposals for developing the CIC.

Technical Support Group

The Technical Support Group will meet in July to review CSNET technical plans. Important areas to be discussed include naming and routing conventions.

Policy Support Group

The Policy Support Group will meet in July to review the full range of CSNET-related issues.

Software Support Activites

The NSF-funded CSNET project will support software development for DEC VAX and PDP11 computers running Berkeley VAX UNIX and Bell V7 UNIX respectively. It is expected that software for other systems will be developed via cooperative university - industry projects to be funded by the vendors.

CSNET Protocol Standards

The CSNET protocol architecture for host - to - host communication is X.25 < IP < TCP < application-protocol (A < B means that protocol B is above protocol A in the protocol architecture). Terminal access via Telenet to CSNET hosts will utilize X.25 < X.28-X.29.

PhoneNet Status

PhoneNet software has been installed on VAX 11/780s at Wisconsin and Purdue which are being polled on a daily basis by an interim PDP 11/70 PhoneNet Relay at Delaware. Purdue and Rand will soon be incorporated into the PhoneNet test group. Rand is currently working on a UUCP channel for PhoneNet. Wisconsin is completing implementation of a PhoneNet interface for the Berkeley VAX UNIX user-level mail system. Delaware is coordinating these efforts, providing maintenance, implementing software enhancements, and beginning the design of a Pascal PhoneNet package.

Public Host Status

Current work includes specification of software required to utilize this dual processor system effectively. Requirements for the CSNET nameserver are also being studied. Four temporary, asynchronous Telenet lines have been installed to the Computer Science Dept. VAX 11/780 to facilitate testing.

Protocol Development Update

This summer, Purdue will receive a test version of Berkeley VAX UNIX with BBN's TCP/IP implementation. Purdue will develop software to interface IP to the ACC X.25 level 3 software. In addition, Purdue will provide an X.29 user PAD to allow incoming calls to CSNET VAX hosts via Telenet public access ports. A later project for PDP11 V7 UNIX will use the Purdue software together with a suitable TCP/IP implementation. TCP/IP alternatives for PDP11's are being evaluated.

This report was prepared by L.H.Landweber for the CSNET Management Committee. Contact any of the Management Committee members listed below for further information.

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Tony Hearn (Rand) - 213 393-0411 - Hearn at Rand-Ai
Bell Kern (NSF) - 202 357-9507 - Kern at Rand-Ai
Larry Landweber (Wisconsin) - 608 262-1204 - lhl.uwisc at Udel